AMENDMENTS TO THE CLAIMS

LISTING OF CLAIMS:

Claim 1 (withdrawn): A process for the production of a modified phytase having a desired property improved over the property of the corresponding unmodified phytase which comprises:

(a) determining the three dimensional structure of the unmodified phytase and of a second phytase which has the desired property by aligning the amino acid sequences of said phytases with the amino acid sequence of a third phytase which is the phytase of Aspergillus niger and using the three dimensional structure of the phytase of Aspergillus niger as a template based on the alignment to determine said three dimensional structures;

(b) determining from the structures of step (a) the amino acids of the active sites of the unmodified phytase and of the second phytase having the desired property which active site provides the desired property and comparing the amino acids which form the active sites to identify which amino acids are different in the active site of the second phytase from the amino acids in the active site of the unmodified phytase;

(c) constructing a DNA sequence coding for the modified phytase by obtaining the DNA sequence of the unmodified phytase and changing the nucleotides coding for the active site which provides the desired property for said unmodified phytase so that at least one of the amino acids in the active site which provides the desired property is substituted by one of the amino acids which was identified as being different in step (b);

(d) integrating such a DNA sequence into a vector capable of expression in a suitable host cell; and

(e) transforming the suitable host cell by the DNA sequence of step (c) or the vector of step (d), growing said host cell under suitable growth conditions and isolating the modified phytase from the host cell or the culture medium.

Claim 2 (withdrawn): The process of claim 1 wherein the unmodified phytase is of eukaryotic origin.

Claim 3 (withdrawn): The process of claim 2 wherein the unmodified phytase is of fungal origin.

Claim 4 (withdrawn): The process of claim 3 wherein the unmodified phytase is of Aspergillus origin.

Claim 5 (withdrawn): The process of claim 4 wherein the unmodified phytase is a phytase from Aspergillus fumigatus.

Claim 6 (withdrawn): The process of claim 1 wherein the phytase with the desired property is of eukaryotic origin.

Claim 7 (withdrawn): The process of claim 6 wherein the phytase with the desired property is of fungal origin.

Claim 8 (withdrawn): The process of claim 7 wherein the phytase with the desired property is of Aspergillus origin.

Claim 9 (withdrawn): The process of claim 8 wherein the phytase with the desired property is a phytase from Aspergillus terreus.

Claim 10 (withdrawn): The process of claim 1 wherein the unmodified phytase is a phytase of Aspergillus fumigatus and the phytase with the desired property is the Aspergillus niger phytase.

Claim 11 (withdrawn): The process of claim 1 wherein the unmodified phytase is a phytase of Aspergillus fumigatus and the phytase with the desired property is the Aspergillus terreus phytase.

Claim 12 (withdrawn): A modified phytase with a specific activity improved over the specific activity of the corresponding unmodified phytase wherein the amino acid sequence of the unmodified phytase has been changed at a position corresponding to position 27 of the phytase of Aspergillus niger to an amino acid selected from the group consisting of Ala, Val, Leu, Ile, Thr and Asn.

Claim 13 (withdrawn): The modified phytase of claim 12 wherein the unmodified phytase is the phytase of Aspergillus fumigatus.

Claim 14 (withdrawn): The phytase of claim 13 having additional mutation selected from the group consisting of S66D, S140Y, D141G, A205E, Q274L, G277D, G277K, Y282H and N340S.

Claim 15 (withdrawn): A modified phytase with a specific activity improved over the specific activity of the corresponding unmodified phytase wherein the amino acid sequence of the modified phytase has one or more of the following mutations selected from the group consisting of S66D, S140Y, D141G, A205E, Q274L, G277D, G277K, Y282H and N340S.

Claim 16 (amended): A polynucleotide comprising a DNA sequence coding for a modified *Aspergillus fumigatus* phytase with a specific activity improved over the specific activity of the corresponding unmodified *Aspergillus fumigatus* phytase wherein the amino acid sequence of the unmodified phytase has been changed at a position corresponding to position 27 of the phytase of *Aspergillus niger* (SEQ ID NO:1), as identified by PILEUP version 8 amino acid sequence alignment program, to an amino acid selected from the group consisting of Ala, Val, Leu, Ile, Thr, Gly, and Asn ~~of claim 12~~.

Claim 17 (cancelled).

Claim 18 (amended): A polynucleotide according to claim 16 wherein the modified *Aspergillus fumigatus* phytase further comprises an additional mutation selected from the group consisting of S66D, S140Y, D141G, A205E, Q274L, G277D, G277K, Y282H, and N340S ~~comprising a DNA sequence coding for a modified phytase of claim 14~~.

Claim 19 (amended): A polynucleotide comprising a DNA sequence coding for a modified *Aspergillus fumigatus* phytase with a specific activity improved over the specific activity of the corresponding unmodified *Aspergillus fumigatus* phytase wherein the amino acid sequence of the modified *Aspergillus fumigatus* phytase has a mutation selected from the group consisting of S66D, S140Y, D141G, A205E, Q274L, G277D, G277K, Y282H, N340S, and combinations thereof, wherein the respective amino acid position of each mutation corresponds to the amino acid position of an *Aspergillus niger* phytase (SEQ ID NO:1) as identified by PILEUP version 8 amino acid alignment program ~~of claim 15~~.

Claim 20 (original): A vector comprising the polynucleotide of claim 16.

Claim 21 (original): The vector of claim 20 which is an expression vector.

Claim 22 (original): A host cell which has been transformed by a polynucleotide of claim 16.

Claim 23 (original): A host cell which has been transformed by a vector of claim 20.

Claim 24 (withdrawn): A food or feed composition comprising a modified phytase of claim 12.

Claim 25 (new): A polynucleotide according to claim 16 wherein the unmodified phytase has the sequence of SEQ ID NO:3.

Claim 26 (new): A polynucleotide according to claim 25 wherein the amino acid sequence of SEQ ID NO:3 has been changed at a position corresponding to position 27 of the phytase of *Aspergillus niger* to the amino acid Ala.

Claim 27 (new): A polynucleotide according to claim 25 wherein the amino acid sequence of SEQ ID NO:3 has been changed at a position corresponding to position 27 of the phytase of *Aspergillus niger* to the amino acid Val.

Claim 28 (new): A polynucleotide according to claim 25 wherein the amino acid sequence of SEQ ID NO:3 has been changed at a position corresponding to position 27 of the phytase of *Aspergillus niger* to the amino acid Leu.

Claim 29 (new): A polynucleotide according to claim 25 wherein the amino acid sequence of SEQ ID NO:3 has been changed at a position corresponding to position 27 of the phytase of *Aspergillus niger* to the amino acid Ile.

Claim 30 (new): A polynucleotide according to claim 25 wherein the amino acid sequence of SEQ ID NO:3 has been changed at a position corresponding to position 27 of the phytase of *Aspergillus niger* to the amino acid Thr.

Claim 31 (new): A polynucleotide according to claim 25 wherein the amino acid sequence of SEQ ID NO:3 has been changed at a position corresponding to position 27 of the phytase of *Aspergillus niger* to the amino acid Asn.

Claim 32 (new): A polynucleotide according to claim 25 wherein the amino acid sequence of SEQ ID NO:3 has been changed at a position corresponding to position 27 of the phytase of *Aspergillus niger* to the amino acid Gly.

Claim 33 (new): A polynucleotide according to claim 25 wherein the amino acid sequence of SEQ ID NO:3 has been modified as follows: Q23L and S62D.

Claim 34 (new): A polynucleotide according to claim 25 wherein the amino acid sequence of SEQ ID NO:3 has been modified as follows: Q23L, S136Y, and D137G.

Claim 35 (new): A polynucleotide according to claim 19 wherein the unmodified phytase has the sequence of SEQ ID NO:3.

Claim 36 (new): A polynucleotide according to claim 35 wherein the amino acid sequence of SEQ ID NO:3 has been modified as follows: S62D.

Claim 37 (new): A polynucleotide according to claim 35 wherein the amino acid sequence of SEQ ID NO:3 has been modified as follows: S136Y.

Claim 38 (new): A polynucleotide according to claim 35 wherein the amino acid sequence of SEQ ID NO:3 has been modified as follows: D137G.

Claim 39 (new): A polynucleotide according to claim 35 wherein the amino acid sequence of SEQ ID NO:3 has been modified as follows: A200E.

Claim 40 (new): A polynucleotide according to claim 35 wherein the amino acid sequence of SEQ ID NO:3 has been modified as follows: Q269L.

Claim 41 (new): A polynucleotide according to claim 35 wherein the amino acid sequence of SEQ ID NO:3 has been modified as follows: G272D.

Claim 42 (new): A polynucleotide according to claim 35 wherein the amino acid sequence of SEQ ID NO:3 has been modified as follows: G272K.

Claim 43 (new): A polynucleotide according to claim 35 wherein the amino acid sequence of SEQ ID NO:3 has been modified as follows: Y277H.

Claim 44 (new): A polynucleotide according to claim 35 wherein the amino acid sequence of SEQ ID NO:3 has been modified as follows: N335S.

Claim 45 (new): A vector comprising the polynucleotide of claim 19.

Claim 46 (new): The vector of claim 45 which is an expression vector.

Claim 47 (new): A host cell which has been transformed by a polynucleotide of claim 19.

Claim 48 (new): A host cell which has been transformed by a vector of claim 45.